WHAT IS CLAIMED IS:

1. A method for making three-dimensional structures of nanometric or micrometric dimensions, in particular of surfaces from which there rise projections having a height of up to 500 micron arranged according to definite geometries, wherein it comprises the following steps:

- obtaining of a photopolymeric or UV mixture including nanoparticles orientable in space;
- deposition of a layer of the mixture on a respective substrate;
- exposure of the layer to UV-radiation and control of the polymerization by means of variation of the index of refraction;
- application of a magnetic and/or electrical field capable of producing a desired orientation or positioning of the nanoparticles in order to induce the growth of surface projections from the layer; and
- polymerization of the mixture.

2. The method according to Claim 1, in which the exposure of the layer to UV-radiation is concomitant with the application of the magnetic and/or electrical field.

3. The method according to Claim 1, in which the exposure of the layer of mixture to UV-radiation and the application of the magnetic and/or electrical field occur in inert environment, i.e., without oxygen.

4. The method according to Claim 1, in which the UV radiation is localized in the areas in which the surface projections must be made.

5. The method according to Claim 4, in which the UV radiation is localized by means of a binary mask or half-tone mask.

6. The method according to Claim 1, in which the layer is exposed to non-uniform UV radiation, with a

consequent non-uniformity in the formation of the polymeric lattice between areas of the layer most illuminated by UV radiation and areas of the layer least illuminated by UV radiation.

7. The method according to Claim 6, in which there is envisaged the control of the variation of the index of refraction of the layer in the areas with different degrees of cross-linking and the consequent modification of the intensity of the magnetic or electrical field.

8. The method according to Claim 1, wherein the exposure of the layer (M) to UV-radiation is envisaged for obtaining a pre-polymerization of the mixture, i.e., a transformation of said mixture from a liquid state to a gelatinous state.

9. The method, according to Claim 8, wherein there is envisaged the application of a localized magnetic field by means of a magnetic tip positionable according to a number of axes adjacent to the layer of mixture.

10. The method according to Claim 9, in which the tip has nanometric dimensions, is made of silicon, and is coated with a magnetic film.

11. The method according to Claim 1, in which the polymerization of the mixture is obtained by means of exposure thereof to UV radiation in the absence of application of the magnetic and/or electrical field.

12. The method according to Claim 11, in which the polymerization of the mixture is obtained by means of localized exposure of the projections to UV radiation in the absence of the magnetic and/or electrical field.

13. The method according to Claims 9 and 12, in which there are provided means for focusing a beam of UV radiation in the proximity of the tip in order to enable cross-linking of a projection previously formed by the tip itself.

14. The method according to Claim 1, in which the

photopolymeric or UV mixture comprises acrylated oligomers and monomers.

15. The method according to Claim 1, in which the orientable nanoparticles are selected in the group consisting of ferrofluids, electro-rheological materials, liquid crystals and magneto-rheological materials.

16. A solid component having three-dimensional surface structures of nanometric or micrometric dimensions, in particular having one or more surfaces in which there are defined projections having a height of up to 500 micron arranged according to definite geometries, obtained in accordance with the method according to one or more of the preceding claims.

17. A solid component having at least one surface from which there rise projections having a height of up to 500 micron arranged according to definite geometries, wherein it is at least in part made using a photopolymer to which are added nanoparticles orientable in space by means of magnetic and/or electrical fields, the concentration of orientable nanoparticles being greater at the projections.

18. The component according to Claim 17, in which the photopolymer has a base of oligomers and monomers.

19. The component according to Claim 17, in which the orientable nanoparticles are selected in the group consisting of ferrofluids, electro-rheological materials, liquid crystals and magneto-rheological materials.

20. An apparatus for the implementation of the method according to one or more of Claims 1 to 15 and/or for obtaining a component according to one or more of Claims 16 to 19.

21. The apparatus according to Claim 20, comprising:

- a support for deposition of a layer of a

photopolymeric or UV mixture including nanoparticles orientable in space;

- means for exposing the layer to UV-radiation;
- means for controlling the polymerization of the mixture by means of variation of its index of refraction;
- means for applying a magnetic and/or electrical field capable of producing a desired orientation or positioning of the nanoparticles of the mixture in order to induce the growth of surface projections from the layer; and
- means for carrying out polymerization of the mixture.